



Susan Solomon has received the Nation's highest scientific honor—the National Medal of Science. The award recognizes Susan “for key insights into explaining the cause of the Antarctic ozone “hole” and advancing the understanding of the global ozone layer that changed the direction of ozone research and provided exemplary service to worldwide public policy.” The National Medal of Science is a Presidential Award given to individuals who have made outstanding contributions to the physical, biological, mathematical, or engineering sciences. President Clinton will bestow the 1999 Medals on Susan and 11 other scientists in a White House ceremony on March 14. Susan is the first NOAA recipient in the Medal's 40-year history.

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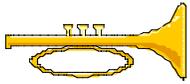
Aeronomy Lab scientists received an unprecedented number of the American Meteorological Society's annual awards. The 1999 AMS awards, presented in January at the 80th Annual Meeting in Long Beach, included four AL researchers. As mentioned in the last newsletter, **Susan Solomon** was awarded the highest honor of the AMS, the Carl-Gustaf Rossby Research Medal. **Karen Rosenlof** received the Clarence Leroy Meisinger Award for “outstanding observational and theoretical analysis of the stratospheric circulation and trace constituent transport.” **Alison Grimsdell** received the Robert Leviton Award for her paper on the use of radar wind profilers in boundary layer studies. And **Katherine Harris** won the Max A. Eaton Prize for her paper on the effects of tropical convection on the circulation of the atmosphere.

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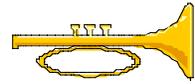
Walt Harrop was awarded a 1999 Department of Commerce Bronze Medal for his work as part of the NOAA-Boulder Network Working Group. The group was honored for designing and establishing a state-of-the-art computing network at the David Skaggs Research Center.

Like the 1999 AMS awards mentioned above, recognition came “in fours” also with the 1999 NOAA/OAR Outstanding Paper Award. Aeronomy Laboratory scientists authored or coauthored four of the twelve papers that were honored. The annual OAR awards recognize papers that have “exceptional originality, scientific importance, technological importance, longevity in value, quality of writing, and relevance to the NOAA mission.” Authors who were with the Aeronomy Lab at the time of the papers' writing are shown in bold:

- **Huey, L.G., E.J. Dunlea, E.R. Lovejoy, D.R. Hanson, R.B. Norton, F.C. Fehsenfeld, and C.J. Howard**, Fast time response measurements of HNO₃ in air with a chemical ionization mass spectrometer, *Journal of Geophysical Research*, 103, 3355-3360 (1998).
- **Murphy, D.M., D.S. Thomson, and M.J. Mahoney**, In situ measurements of organics, meteoritic material, mercury, and other elements in aerosols at 5 to 19 kilometers, *Science*, 282, 1664-1669 (1998).
- **Ryerson, T.B., M.P. Buhr, G.J. Frost, P.D. Goldan, J.S. Holloway, G. Hübler, B.T. Jobson, W.C. Kuster, S.A. McKeen, D.D. Parrish, J.M. Roberts, D.T. Sueper, M. Trainer, J. Williams, and F.C. Fehsenfeld**, Emissions lifetimes and ozone formation in power plant plumes, *Journal of Geophysical Research*, 103, 22569-22583 (1998).
- **McPhaden, M.J., A.J. Busalacchi, R. Cheney, J.-R. Donguy, K.S. Gage, D. Halpern, M. Ji, P. Julian, G. Meyers, G.T. Mitchum, P.P. Niiler, J. Picaut, R.W. Reynolds, N. Smith, and K. Takeuchi**, The Tropical Ocean-Global Atmosphere observing system, A decade of progress, *Journal of Geophysical Research*, 103, 14169-14240 (1998).



ANNOUNCEMENTS



A special section on the 1997 Photochemistry of Ozone Loss in the Arctic Region In Summer (POLARIS) experiment was published by the *Journal of Geophysical Research* in November 1999. Ten of the 21 papers are authored or coauthored by Aeronomy Lab scientists in the Meteorological Chemistry group. **Dave Fahey** was the Coproject Scientist for POLARIS, which investigated the chemical and transport processes that cause the summertime decreases in Arctic stratospheric ozone.

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The report *Health of the Atmosphere Progress Report: The First Five Years 1995-1999* is now

available on the Aeronomy Laboratory web page (www.al.noaa.gov) and in hardcopy from the Director's Office. The report describes the goals, accomplishments, and future plans of NOAA/OAR Health of the Atmosphere air quality research.

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Mary Gilles is now the Safety Officer for the Aeronomy Laboratory. She takes over for **Dan Murphy**, whom we thank for his many years of representing the Aeronomy Laboratory on the MASC Safety Committee. The Committee oversees issues related to chemical usage, chemical disposal, and safety at the DOC Boulder Laboratories.



HOME and AWAY

SOLVE Underway in Sweden

If the hallways have seemed a bit emptier lately, it's because most of the Meteorological Chemistry group is in Kiruna, Sweden, for the SAGE III Ozone Loss and Validation Experiment (SOLVE). In this phase of SOLVE, researchers are getting an intensive look at the Arctic stratosphere during the critical period preceding and during the early spring ozone loss. Aeronomy Lab instruments are onboard the NASA ER-2 high-altitude research aircraft to sample reactive nitrogen and ozone. The Kiruna location is farther north than base camps of earlier Arctic missions, which has enabled the ER-2 to fly more deeply into the vortex than ever before. Early results are intriguing; we'll give a more detailed account in our next issue when the researchers have completed the present deployment, which runs through March. In the meantime, see more about the mission on our web page (www.al.noaa.gov) and follow an evolving gallery of photos and descriptions by Tom Thompson on www.tomthompson.com.

Radiation, Clouds, and Chemistry

Members of the Chemistry and Climate Processes group will be hoping for bad weather in Florida this spring, as they embark on a series of flights to measure the effects of clouds on absorption of radiation in the atmosphere. The Florida Bay Experiment will run throughout May, with the Aeronomy Lab operating a visible spectroscopy instrument aboard the NOAA WP-3D research aircraft. The group's objective is to better quantify the absorption within and above clouds related to three factors: water vapor (whose absorption is enhanced by multiple scattering within clouds), nitrogen dioxide (which is a significant "anomalous" absorber that has not been accounted for in radiative transfer models), and optical path (dependent on the number of in-cloud multiple reflections that enhance the absorption by clouds). The group hopes to sample in clouds and

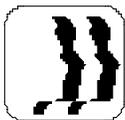
to get as close as possible to any electrically active storms, where lightning-produced nitrogen dioxide would be present. The mission marks the first airborne deployment of visible spectroscopy instrumentation by the group, which developed a compact instrument system for the mission.

TexAQS 2000

The Tropospheric Chemistry and Theoretical Aeronomy groups are gearing up for a major field study this summer in Texas, the 2000 Texas Air Quality Study (TexAQS 2000). Researchers from universities, private industry, the Department of Energy, the state of Texas, and NOAA will join forces to study photochemical oxidants and aerosols in the Houston-Galveston area and the broader area of eastern Texas. The region is targeted because it experiences significant ozone problems, and it may have some difficulty meeting possible future federal standards for particulate matter. For more details, please see the link on our web page (www.al.noaa.gov/WWHD/Pubdocs/SOS/sos99.links.html) and watch future issues of this newsletter.

Two Communities Come Together

A new interagency group has been formed to foster coordination and collaboration among Federal research organizations that deal with particulate matter (PM) research. The group brings together, for the first time in the Federal arena, the health effects community and atmospheric researchers. The PM Research Coordination Working Group is a new component of the Air Quality Research Subcommittee (AQRS) of the Committee on Environment and Natural Resources (CENR). Cochairs of the new group are from the Environmental Protection Agency and the National Institutes of Health, and Jim Meagher is one of the four program coordinators. Among the first activities of the group will be to evaluate recent recommendations of the National Research Council's Committee on Research Priorities for Airborne PM.



WHAT'S UP WITH PEOPLE

Detlev Helmig of the University of Colorado has joined the Tropospheric Chemistry group part-time through April, to work on an instrumentation project for the WP-3D aircraft. **Owen Cooper** of the University of Virginia is visiting the group through mid-May, to carry out meteorological analyses of data from the 1997 mission of the North Atlantic Regional Experiment (NARE). **Edeltraud Leibrock** has left the group to take a position in Germany in the field of information technology. She had worked with the group for two years on the real-time nitric acid instrument... **Youhua Tang**, formerly with the Chinese Academy of Sciences, has joined the Theoretical Aeronomy group. He is a National Research Council postdoctoral fellow who is working on the modeling for the 1999 Nashville air quality campaign... **Guus Velders** has been visiting the Chemistry and Climate Processes group since October to collaborate on modeling projects. He returns in February to the National Institute of Public Health and the Environment in The Netherlands... In the Atmospheric Chemical Kinetics group, **Glenn Morrison** has begun a postdoctoral appointment to do kinetics research. He received his Ph.D. from UC-Berkeley. **Scott Herndon** received his Ph.D. from CU and is now doing postdoctoral research at Aerodyne Research, Inc. **In Koo Kim** completed his masters degree at CU and is pursuing a scientific writing career in New York... **Rick Tisinai** has joined the Computing and Networking Resources Group. He will be assisting with CNRG's Lab-wide computer support activities... We wish everyone the best in their new endeavors, whether here or elsewhere!



COMMUNICATING OUR SCIENCE

To Decisionmakers: In December, Jim Meagher presented air quality briefings to members of the Office of Management and Budget (OMB), the Director and staffers of the Air Division of the Environmental Protection Agency's Southeastern Region IV, and congressional staffers. He described major findings and implications of the 1999, 1995, and 1994 Tennessee ozone studies... Dan Albritton attended an October drafting meeting for the Synthesis Team report of the NARSTO air quality assessment. The report will be finalized this year.

To the Scientific Community: Venues included:

- *Scientific Conferences and Symposia:* Dan Albritton gave an invited presentation at the 80th Annual Meeting of the American Meteorological Society, held in January in Long Beach. Dan's presentation on the findings of the most recent World Meteorological Organization (WMO) scientific assessment of the ozone layer matched well with the meeting's theme, which was "Applying Environmental Science to Societal Needs in the New

Millennium." Several other Aeronomy Lab scientists attended the meeting and gave presentations... Several Aeronomy Lab scientists presented talks and posters at the Fall Meeting of the American Geophysical Union in December... In November, Jerry Weinstock gave a presentation on turbulence at the Fluid Dynamics Meeting of the American Physical Society... Ravi, Victor Dvortsov, and Greg Frost gave presentations at the 2nd Gentner Symposium on Geoscience, held in late October in Israel... In October, Ravi gave the plenary lecture at the Annual Conference of the American Association for Aerosol Research in Tacoma, Washington. Ann Middlebrook chaired three sessions at the conference, and other Aeronomy Laboratory scientists participated in the meeting... Erik Richard and Adrian Tuck attended the Chapman Conference on Water Vapor in the Climate System, held in October in Maryland... At the October meeting of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) in Vancouver, Paul Goldan gave an invited talk on aircraft-based fast gas chromatography measurements.

- *Research Workshops:* Adrian Tuck and Karen Rosenlof gave invited talks at the Brewer-Dobson Workshop in Oxford, UK, in mid-December... Several Aeronomy Lab scientists participated in the Texas Air Quality Study 2000 (TexAQS) Science Team Meeting held at Rice University in early November... Scientists from the Meteorological Chemistry group attended a November workshop of the Interagency Working Group on the Atmospheric Impact of Rocket Engine Emissions, held at NASA Goddard Space Flight Center. Dan Albritton described the information needs of the Montreal Protocol to the group... In October, Paul Johnston traveled to Washington state to participate in a data discussion meeting related to the Nauru 99 experiment... Christopher Williams and Ken Gage participated in the Tropical Rainfall Measuring Mission (TRMM) science meeting held in October in Maryland... George Reid attended the Upper Atmosphere Research Satellite (UARS) science team meeting in Virginia Beach in October.

- *Invited Lectures and Seminars:* Ravi presented the National Academy of Sciences Robertson Memorial Lecture at the American Association for the Advancement of Science (AAAS) regional meeting in Irvine, CA, on January 24. He spoke on "Atmospheric Lifetimes: Concept, Quantification, Application, and Implication"... On 19 January, Susan Solomon presented this year's Thompson Lecture at the National Center for Atmospheric Research. She gave an update of the science of ozone depletion from "pole to pole"... Ravi gave a talk in early December at Los Alamos National Laboratory, on the topic of stratospheric ozone... In November, Tom Ryerson spoke at the University of Alaska on the chemistry of air quality... At Georgia Tech in November, Ravi gave a talk on the role of nitrogen oxides in the atmosphere... In November, Ken Gage and Christopher Williams gave talks on the subject of TRMM research at Kyoto University's Radio Atmospheric Science Center and also at the

Communications Research Laboratories in Japan... Klaus Pfeilsticker gave a seminar at NASA Goddard Space Flight Center in November.

To Media: On January 30, Susan Solomon was featured in NCAR scientist Tom Windham's science column in the Boulder *Sunday Camera*... Dave Fahey was interviewed by the Boulder *Daily Camera* concerning the SOLVE mission to study Arctic ozone loss. The article appeared on the front page on January 29... Dan Albritton was interviewed by the Weather Channel in January, on the topic of the ozone layer... Dave Fahey was interviewed in December by *Boulder Magazine* for an article in which several Boulder notables were asked to reflect on the new century. Dave described the prospects for the ozone layer and discussed research challenges concerning the effects of current and future aviation on the atmosphere... David Thomson was interviewed by the Costa Rican print and television media during a stop of the ER-2 at San Jose during the Atmospheric Chemistry of Combustion Emissions Near the Tropopause (ACCENT) mission last fall. Dave and ER-2 pilot Scott Reagan appeared on television describing the mission.

To Students and Teachers: Leslie Hartten, John Holocek, and Katherine Harris are volunteer mentors in a joint IBM/University of Colorado outreach project that is seeking to improve math scores in elementary grade levels. E-mail communications and classroom visits are occurring throughout the semester... On November 9, Wally Clark presented an invited lecture to students at a CU electrical engineering course on radar systems and remote sensing. Wally described applications of dual-wavelength radar techniques... In October, Susan Solomon presented an honorary lecture to students and visited classrooms at Yale University.

To Our Visitors: On December 7, Dan Albritton hosted a visit to the Aeronomy Lab by former Rep. David Skaggs and his family... The NOAA Science Advisory Board visited the Aeronomy Lab on October 21. Dan Albritton gave an overview of the David Skaggs Research Center as well as the Aeronomy Lab's research. Ravi hosted a tour of the chemical kinetics laboratory and Ann Middlebrook showed the single-particle analysis instrument to the group. Three Aeronomy Lab posters were selected for a CIRES poster session held in conjunction with the Board's visit. Eric Williams, Erik Richard, Susan Hovde, and Christopher Williams took the lead in preparing those posters on behalf of numerous internal and external coauthors... On October 8, Dan Albritton described the David Skaggs Research Center to the visiting CIRES External Review Team.

Through Service on Scientific Panels and Boards: Jim Meagher has been elected as the public-sector cochair for NARSTO, a public/private partnership focused on ozone and particulate matter research. The cochair representing the private sector is from the American Petroleum Institute... George Kiladis has begun a three-year term as editor of the *Journal of Atmospheric Sciences*. George is also serving on

the Pacific Implementation Panel of the World Climate Research Program's CLIVAR (Climate Variability and Predictability) program... Susan Solomon is chairing the committee that is assisting NCAR with its search for a new Director of its Atmospheric Chemistry Division... Jim Burkholder served as the Aeronomy Lab representative on the OAR-wide review panel for the 1999 OAR Outstanding Papers awards... In October, Adrian Tuck served as a consultant to the Advisory Board of the United Kingdom's Joint Infrastructure Fund, which sets science research funding priorities within the UK... Dave Fahey is serving on the Peer Review Panel for middle atmosphere science at the NASA Langley Research Center... On December 31, Dan Albritton completed a two-year term as the Chair of the Tenant Directors Board of the David Skaggs Research Center. During his tenure, he oversaw a key period of planning, relocation, and settling into the new building.

DOWN THE ROAD



February 15-17: Third-Draft Meeting, Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report, Auckland, New Zealand.

March 13-17: Ninth Workshop on Technical and Scientific Aspects of Mesosphere-Stratosphere-Troposphere Radar, France. Members of the Tropical Dynamics and Climate group will attend.

March 6-10: Southern Oxidants Study 2000 Data Analysis Workshop, Research Triangle Park. Several scientists from the Aeronomy Lab will be presenters and session organizers at the meeting.

March 6-10: Spring Meeting, NOAA Climate and Global Change Panel, Monterey.

March 16-17: International Global Atmospheric Chemistry (IGAC) Workshop on Intercontinental Transport and Chemical Transformation, Tokyo, Japan. Tropospheric Chemistry and Theoretical Aeronomy group members will participate.

May 30-June 3: Spring Meeting of the American Geophysical Union, Washington DC.

July 3-8: Quadrennial Ozone Symposium, Japan.

July 10-14: Royal Meteorological Society, 150th Anniversary Conference, Cambridge, UK.

Upcoming AL Seminar Speakers: Joost deGouw, Utrecht University (2/25); Owen Cooper, AL (3/1); Klaus Nielsen, University of Oslo (3/8); Peter Hess, NCAR (3/15); Michael Tjernstroem and Gunilla Svenson, University of Stockholm (4/12).

 *On the Air!* is a quarterly publication of the NOAA Aeronomy Laboratory. It is posted on the World Wide Web at www.al.noaa.gov. Please send comments, suggestions, or questions to: Chris Ennis (phone 303-497-7538; email Christine.A.Ennis@noaa.gov).